

1. A method for detecting a cancer in a brain tissue sample, the method comprising the steps of:

- (A) providing the brain tissue sample; and
- (B) analyzing the brain tissue sample for a VEGF-D marker.

2. The method of claim 1, wherein the step (B) of analyzing the brain tissue sample comprises comparing the quantity of expression of the VEGF-D marker to a first sample known to express detectable levels of the VEGF-D marker and a second sample known to not express detectable levels of the VEGF-D marker.

3. The method of claim 1, wherein the VEGF-D marker is a VEGF-D nucleic acid.

4. The method of claim 3, wherein the VEGF-D nucleic acid is an RNA.

5. The method of claim 3, wherein the VEGF-D nucleic acid is a native VEGF-D nucleic acid.

6. The method of claim 3, wherein the step (A) of providing a tissue sample comprises obtaining the brain tissue sample from a human subject; and the step (B) of analyzing the brain tissue sample comprises isolating RNA from the tissue sample, generating cDNAs from the isolated RNA, amplifying the cDNAs by PCR to generate a PCR product.

7. The method of claim 3, wherein the step (A) of providing a brain tissue sample comprises obtaining the tissue sample from a human subject; and the step (B) of analyzing the brain tissue sample comprises isolating nucleic acid from the tissue sample, and contacting the isolated nucleic acid with an oligonucleotide probe that hybridizes under stringent hybridization conditions to the VEGF-D nucleic acid.

8. The method of claim 7, wherein the oligonucleotide probe further comprises a detectable label.

5 9. The method of claim 1, wherein the VEGF-D marker is a VEGF-D protein.

10. The method of claim 9, wherein the VEGF-D protein is a native VEGF-D protein.

10 11. The method of claim 9, wherein the VEGF-D protein is a proteolytic cleavage product of a VEGF-D precursor protein.

12. The method of claim 11, wherein the proteolytic cleavage product comprises a VEGF-D homology domain.

15 13. The method of claim 9, wherein the step (A) of providing a brain tissue sample comprises obtaining the brain tissue sample from a human subject; and the step (B) of analyzing the brain tissue sample comprises contacting at least a portion of the brain tissue sample with a probe that specifically binds to the VEGF-D protein.
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14. The method of claim 13, wherein the probe comprises a detectable label.

25 15. The method of claim 13, wherein the probe comprises an antibody.

16. The method of claim 15, wherein the antibody is a polyclonal antibody.

30 17. The method of claim 15, wherein the antibody is a monoclonal antibody.

18. The method of claim 17, wherein the monoclonal antibody is VD1.

19. A method of modulating VEGF-D gene expression in a brain cancer cell comprising the steps of:

- 5 (A) providing a brain cancer cell that expresses a VEGF-D gene;
and
(B) introducing into the cell an agent that modulates the expression of the VEGF-D gene in the cell.

20. The method of claim 19, wherein the agent is an oligonucleotide.

21. The method of claim 19, wherein the agent is an antisense oligonucleotide.

22. The method of claim 21, wherein the antisense oligonucleotide hybridizes under stringent hybridization conditions to a polynucleotide that encodes a VEGF-D protein.

23. A method of identifying a test compound that modulates expression of a VEGF-D gene in a brain cancer cell, the method comprising the steps of:

- 20 (A) providing a brain cancer cell expressing a VEGF-D gene;
(B) contacting the cell with the test compound; and
(C) detecting a modulation in the expression of the VEGF-D gene,
wherein detecting the modulation indicates that the test compound modulates
25 expression of the VEGF-D gene.

24. The method of claim 23, wherein the cell is derived from a tissue sample isolated from a human brain.

30 25. The method of claim 23, wherein the step of detecting the modulation in the expression of the VEGF-D gene comprises analyzing the cell for a change in the amount of a VEGF-D marker in the cell.

26. The method of claim 25, wherein the VEGF-D marker is a VEGF-D nucleic acid.

5 27. The method of claim 26, wherein the VEGF-D nucleic acid is an RNA.

28. The method of claim 26, wherein the VEGF-D nucleic acid is a native VEGF-D nucleic acid.

29. The method of claim 25, wherein the VEGF-D marker is a VEGF-D protein.

30. The method of claim 29, wherein the VEGF-D protein is a native VEGF-D protein.

31. The method of claim 29, wherein the VEGF-D protein is a proteolytic cleavage product of a VEGF-D precursor protein.

20 32. The method of claim 31, wherein the proteolytic cleavage product comprises a VEGF-D homology domain.

33. A method for inhibiting angiogenesis associated with a brain cancer in a subject, the method comprising the steps of:

25 (A) providing a molecule that interferes with VEGF-D binding to a VEGF-D receptor; and

(B) administering the molecule to the central nervous system of the subject in an amount effective to inhibit blood vessel development associated with the brain cancer.

30 34. The method of claim 33, wherein the molecule specifically binds VEGFR-2.

35. The method of claim 33, wherein the molecule specifically binds VEGFR-3.

36. The method of claim 33, wherein the molecule specifically binds VEGF-D.

37. The method of claim 33, wherein the molecule is an antibody.

38. The method of claim 37, wherein the antibody is a polyclonal antibody.

39. The method of claim 37, wherein the antibody is a monoclonal antibody.

40. The method of claim 39, wherein the monoclonal antibody is VD1.

41. The method of claim 37, wherein the antibody specifically binds to the VEGF-D protein.

42. The method of claim 37, wherein the antibody specifically binds to VEGFR-2.

43. The method of claim 37, wherein the antibody specifically binds to VEGFR-3.

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